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MEETING THE NEEDS OF WAR

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

Men, Soil, and Equipment are answering the National Colors. "Food for Freedom" is more than a phrase—it is the practical objective of the main agricultural drive. Read Glennon Loyd's article, *"Selective Service for Each Acre."* Also, *"Farm Planning for War Needs"* and *"Mobilization of Service Equipment for Civilian Defense."*

UNITED STATES DEPARTMENT OF AGRICULTURE – WASHINGTON

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WELLINGTON BRINK
EDITOR

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SOIL CONSERVATION

CLAUDE R. WICKARD
Secretary of Agriculture

HUGH H. BENNETT
Chief, Soil Conservation Service

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SELECTIVE SERVICE FOR EACH ACRE

BY GLENNON LOYD [1]

A MINNESOTA farmer would not think of launching his food for freedom program to increase milk production by placing his herd on an exclusive ration of foxtail hay. Nor could he expect to meet his patriotic pledge if he suddenly adopted a policy of whacking Old Bossy with his milk stool every time she switched her tail.

And, strange indeed would be the Iowa corn-hog farmer who would contemplate expanding his pork production by saving only the runts of the litters for breeding stock, and letting them rustle acorns.

On the contrary, the Minnesota farmer is contributing his full share to victory by thoughtful care and more balanced rations, and the Iowan is selecting his seed stock for his swine expansion with an eye for efficiency in converting corn into pork.

But from a soil conservation standpoint, these same farmers may unwittingly starve their acres, abuse their land and go about increasing wartime crop production in a clumsy manner.

Thus the Soil Conservation Service has its job in the tense emergency laid out. It is the United States Department of Agriculture's watchdog of the land's fertility and productivity, as the Nation's farmers willingly put aside their "farming as usual" blueprints and whip up production of pork, eggs, milk, and certain other products.

The sound conservation in which the Service has assisted thousands of farmers, on millions of acres, supplies the specifications for accomplishment of agriculture's task without placing a needless strain on the soil. The present emergency calls for each farmer to set up a "selective service system" for each acre of his place because proper use of the land is the first fundamental of soil conservation. It also means that farmers must not repeat their World War I mistake—wanton plowing and cropping of every nook and cranny on the farm. Fortunately today we can benefit by our past experience and increased knowledge of soil conservation to take prompt and effective action to expand production without wasting our soil.

The farmer who has a complete soil conservation plan based on capabilities of the land is in a preferred position for he already has his "selective service" work done on his acres. He knows how intensively he dares crop any piece of land, and how to avoid the ravages of erosion or depletion of fertility. He knows which fields are productive enough to grow an extra year of corn in the rotation, if necessary.

Unfortunately, we cannot muster soil surveys and land use capability maps for every farm in the country overnight. Our greatest contribution necessarily must be through assisting farmers, on a Nation-wide basis, in the adoption of simple and easy-to-install soil conservation practices based on sound land use.

Wiser use of land, contour farming on slopes, and pasture improvement can be put into effect by almost all farmers this spring of 1942. These practices, quickly established, will help greatly in accomplishing our goal—increased production without further draining of soil resources.

Proper use of the soil means that intensive production of grain and cultivated crops must be confined to level and gently sloping land. Land too sloping for safe cultivation, or subject to serious erosion, can be used most advantageously for hay or pasture, our cheapest sources of feed.

Permanent pasture or trees should be the only crop on seriously eroded, steep, or poor sandy land and unproductive soils. Some steep grassland, if not cut

[1] Head, regional current information section, Soil Conservation Service, Milwaukee, Wis.

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or grazed too closely, can be used for hay or pasture. We can do one thing to help permanent pastures get started off on the right foot this spring—in all instances, permit them to make at least a 4-inch growth before turning in the stock.

Pasture improvement is another step we can take to produce immediate results and carry lasting effects. A complete job of pasture renovation includes these steps: thorough working up of the old sod as soon as the frost begins to disappear; liming; fertilizing where needed; reseeding with legumes, restricted grazing until the seeding becomes well established. This probably will cost around $8 per acre, but it generally doubles or triples the amount of pasturage and, with proper management, the job lasts from 5 to 8 years. Clipping weeds at blooming time and using manure on pastures—covering as many acres as possible each year—are two other proved practices farmers can use to help boost pasture output.

In this Upper Mississippi Region the following suggestion is being issued to farmers, in a printed statement, Produce Food for Freedom, through the county and State Defense Boards of the United States Department of Agriculture:

Lime, if needed, to grow alfalfa or sweetclover; disk or spring-tooth thoroughly on the contour; seed a legume-grass mixture before grain-seeding time in the spring; pasture legume mixtures after they are 8 to 12 inches high—then practice controlled grazing, leaving several inches of growth in the fall; use supplementary pastures to relieve permanent pastures. Second year sweetclover should be grazed heavily early in the spring.

To conserve cropland while producing, the Produce Food for Freedom suggestions are as follows:

1. Improve your soil by liming acid soils, using commercial fertilizer where its application will economically increase yields and improve quality; seeding sweetclover for green manure in all grain on nonacid or limed soils where corn is to follow the next year; applying barnyard manure and returning cornstalks, stubble, and other crop residue to the soil.

2. Install soil conserving rotations because they are the most profitable. Use rotations containing 1 or more years of grass-legume meadows, keeping in mind that steeper slopes or less productive soils yield a larger total if in hay or pasture one-half or more of the time.

3. Hold soil and water on the hillsides by contouring the crop lands subject to erosion, or using rotations with more hay and pasture on land where it is not practical to farm on the contour. Contour strip crop where practical. Where more control is needed than is provided by contour tillage or strip-cropping, terrace long slopes up to 10 percent on which adequate terrace outlets are available or can be constructed.

4. Grow soybeans only on land not subject to erosion. On sloping soil soybeans should replace corn rather than grain in the rotation and should be grown on the contour. Wherever possible, follow soybeans with a winter crop such as winter wheat or rye.

5. Prevent wind erosion by planting at right angles to prevailing winds; leave field rough and leave some trash to prevent soil blowing; use field strips 10 to 20 rods wide on soils that blow; and plant at least 4 rows of corn for every 20 rows of potatoes, and leave corn standing over winter.

Farmers generally can reduce the requirements for commercial protein feeds, for both hogs and cattle, by expanding acreage of legume pasture and hay. In addition to being high in protein, legumes ordinarily yield a greater tonnage per acre than most other pasture seedings and, in addition, require less labor per unit of feed, compared with cultivated crops.

An Iowa farmer, V. Loy of Bedford, made this remark to R. G. Bullard of the Taylor County (Iowa) Soil Conservation District staff: "In 1941 my alfalfa field produced more pork than an equal acreage of corn and a hay crop besides." This experience convinced Loy that he can get greater production of pork by substituting alfalfa for part of the corn in hog feeding. Raymond Meissen, Illinois farmer near Durand, said that the 81 pigs he had on a field of alfalfa last year made more rapid gains than any he had raised before. The only difference in feed and management was the clean alfalfa field.

There is no necessity for bleeding the remaining topsoil from our hills; nor is there any excuse for removing what is left of the precious fertility from our other less productive acres. We have the skill and the tools to get this job done and we must redouble our efforts immediately so that the thousands of farmers who have solved their erosion problem can get at the work of spreading the gospel of soil conservation.

If we do our part there will be little need for farmers to call gully scarred or wounded acres to the front lines of this food for freedom production campaign. We do not want new gullies, or any additional erosion-scarred fields, after the campaign is over and the food for freedom program is an accomplished fact.

MOBILIZATION OF SERVICE EQUIPMENT FOR CIVILIAN DEFENSE

BY G. E. RYERSON [1]

EMPLOYEES of the Soil Conservation Service are to have another opportunity to assist in the War effort—we are to have the privilege of contributing our time and energy to mobilize Service equipment for defense of the civilian population.

The Department of Agriculture has more equipment of widely diversified types than any other civilian branch of the Government, and our Service is one of the largest users of equipment in the Department. Soil Conservation Service equipment consists of all types of transportation vehicles, tractors, earth-moving machines and tools, pumps and other materials, and supplies. It can be of tremendous value to the country if it is organized and mobilized so that it, along with operating personnel, can be used to repair damage and alleviate suffering in bombed or otherwise stricken areas.

A certain memorandum of authority (Secretarial Memorandum No. 961) provides for the mobilization of Departmental equipment "so that it may be used in an orderly and efficient manner to render aid to the extent of its capacity in any needs of civilian defense." A Departmental Equipment Mobilization Committee has been established to "effectuate this policy and to expedite the organization" of equipment. The Washington committee is composed of one member from each of the Bureaus of the Department operating any substantial amount of equipment.

Provision is also made for the establishment of Regional United States Department of Agriculture Equipment Mobilization Committees to serve in the Civilian Defense Regions, which are identical with the Army Corps Areas rather than the regions of the Soil Conservation Service. The responsibilities of the regional committees will be as follows: (1) to mobilize and organize the Department equipment resources in such a way that they will be of the most value to the public in the event of an emergency; (2) to carry out this mobilization and organization in such a manner as to minimize any interference with the normal activities of the Departmental agencies; and (3) to take action to effectuate and coordinate the operation of the program when emergency conditions prevail. It is expected that the program to be developed in accordance with this broad policy will be particularly valuable in providing assistance to the rural areas that otherwise might not have adequate facilities for protection or relief if subjected to bombing.

In carrying out our responsibility under this policy, we of the Service, in conjunction with the other Bureaus, must first determine what usable equipment in virtually all categories can be made available for emergency use without serious disruption of permanent installations or interference with any program vital to the prosecution of the War efforts. After this survey has been made, and the equipment is located and classified, we shall then organize it into individual units, and furnish each unit with whatever tools, supplies, etc., may be necessary for the greatest possible protection or relief to the particular area that may be served. Service personnel will, of course, be trained in the operation of these civilian defense equipment units, and will be assigned for emergency duty in such a way that assistance can be rendered on a continuous basis.

In developing an organization such as this, many details have to be anticipated and provided for in advance since the circumstances under which such units must operate nullify any possibilities of obtaining emergency repair service or supplies. Furthermore, in the development of plans it must be kept in mind that we may be called upon to operate in conjunction with any one or all of the six divisions of Civilian Defense, namely, the Fire Department, Police Department, Wardens Division, Medical Division, Public Works Division, and Utilities Division.

There is, of course, no definite idea at this time as to the form the field organizations may take, since it is recognized that operating divisions of the different Bureaus vary widely throughout the country. It is expected, however, that the personnel will be asked to effect an organization that will accomplish the purpose outlined, in addition to fulfilling their regular Soil Conservation Service activities.

The plan of operation that has been developed and already put into effect at the Albuquerque, N. Mex., regional headquarters is being cited as an example of what can and should be accomplished. An outline discussion of some of the units developed and their intended purpose is given in the following:

[1] Head, equipment section, division of engineering, Soil Conservation Service, Washington, D. C.

FIRE FIGHTING UNIT

Personnel.—1 Leader or Chief, 1 Driver, 6 Firemen. All of these persons are qualified as drivers, fire fighters, pump men, and in demolition work. Three of them are qualified in first aid.

Equipment.—This unit consists of a 2-ton truck on which is mounted the following:

a 400-gallon water tank.
21½" centrifugal pumps, connected in series.
250′ 1½" fire hose.
30′ Suction hose.
6 Foamite fire extinguishers (3-gallon capacity).
6 Pyrene fire extinguishers (1-quart capacity).
1 3-KW light plant.
4 Fire axes; bars, shovels, wrenches and necessary small tools.

Purpose and use.—This is, in effect, an auxiliary fire wagon. The pumps can take the water from the 400-gallon tank, from a city fire plug, or from an open ditch or pond. The truck is equipped with flood lights for use where light is needed.

REPAIR AND DEMOLITION UNIT

(Welding and Cutting)

Personnel.—1 Operator, 3 Assistant Operators.

Equipment.—This unit consists of a 1½-ton truck on which is mounted a 300 amp. Wildcat electric welding machine. This welding machine has an AC generator that furnishes power or lights for the job. Tank of oxygen and acetylene, welding, and cutting torches, with hose, bars, hammers, clamps, and chain pulls or come-alongs of 1½-ton capacity.

Purpose and use.—This unit can be moved very rapidly to any location for emergency repairs as needed, or where metal obstacles, such as light poles, beams, girders, etc., should be cleared away. The cutting torches can be used to cut metal obstructions, destroy barbed wire entanglements, or other obstacles. The electric welding machine can be used for quick emergency repairs to water mains, gas mains, damaged girders, bridge structures, or for reinforcing other types of emergency equipment.

PLANT UNIT

Personnel.—1 Warden, 2 Watchers, 1 Service and Supply Sergeant, 1 Desk Sergeant, 2 Guards, 1 Alternate Driver and Mechanic, 1 Messenger, 1 Communications and Contact Man.

Purpose and use.—This unit is set up to protect materials, buildings, and equipment, and to facilitate the handling of materials and supplies needed during emergency, or by any of the portable units working from this station. The personnel would watch for and report fires, raids, or other unusual activities; keep records of the location of the various portable units that might be in the field and answer the requests from those units for extra materials and supplies, using the messenger and communications personnel to make the contacts.

MOBILE ELECTRIC GENERATOR UNIT

Personnel.—1 Operator, 1 Assistant Operator.

Equipment.—Pickup-type truck on which is mounted the following: 1 or 2 gasoline driven 2 KW or 3 KW electric generators: 400′ of No. 10 rubber-covered wire; hand tools and miscellaneous supplies.

Purpose and use.—This unit can move rapidly to any location where a small amount of power or lights is needed. This equipment is a 110-volt DC, and almost all standard electrical appliances and lights could operate from these generators. They would be particularly useful in lighting hospitals, work locations (head quarters), telephone exchanges, or other important locations that must carry on operations even during a major failure of power lines.

It is expected that the organization of the regional committees will take place rapidly after Departmental policies are thoroughly defined. The first organization of these committees will be in the Coastal areas. Work in the central parts of the country probably will be deferred until some experience is gained in those regions which will be going into operation in the near future.

THE CCC MARCHES ON

BY G. H. GILBERTSON [1]

THE BIRTHDAY celebration of the CCC on April 5, 1942, will be strictly a long pants affair. In nine brief years, the Civilian Conservation Corps has passed the swaddling clothes stage, outgrown its schoolboy era, and now, doing a man's job, takes its place among the adult agencies of the Government.

In its babyhood, the CCC was probably regarded by many people as an agency to provide work for unemployed boys. In its maturity, these same people will think of the Corps as a labor battalion which is making a highly important contribution to urgent and essential defense work.

In its tenth year, because of war needs, the CCC's work program is changing. CCC companies are being summoned from the fields, parks, and forests to assist the armed forces, not as combatant troops, but as a civilian labor corps, with experienced foremen and technicians, participating in construction and maintenance programs of military and strategic importance.

This role for the CCC is not entirely new. At the beginning of the defense program, a few companies were assigned to military forts and reservations to help complete part of the great task involved in expanding the military posts to the size needed to train the new army. Others were put to work building recreation camps near cities for the housing of soldiers on week-end leave. These undertakings met with such widespread approval that the War Department asked the CCC Director to reassign more CCC companies for similar work.

[1] Information division, Soil Conservation Service, Washington, D. C.

Hundreds have been called to the CCC from farms, forests, and parks, to assist with work of military and strategic importance. This crew, under Army direction, is clearing a parachute troop landing field on a military reservation.

Ordinarily it might be expected that some opposition to this request would come from conservation agencies cooperating in the CCC program. Their work, such as protection of forests against fires and of fields against soil erosion, has an increased importance in the war program. Uncontrolled fires—a "natural" for saboteurs—not only can cause tremendous losses of the timber needed for war production, but also can destroy communication lines, interrupt transportation, or even interfere with the identification of enemy planes by clouding the skies with smoke.

Likewise, the soil conservation work takes on new importance in the program for increased production of food needed by the Nation and her allies. If the errors that accompanied increased production during the last war are not to be repeated—if the post war consequences are not to be another cycle of "black blizzards" and a tremendous loss of productive topsoil—this increased production must be achieved through farm practices that will both protect the soil and yield the essential fats, oils, and food stockpiles.

These—protection against forest fires and against soil destruction—are programs in which the CCC has assisted by providing the labor needed to swing them into action. Yet, important as they are, the conservation agencies recognize that military needs constitute first priority in wartime.

It is entirely probable, however, that all of the CCC companies now doing conservation work will not be needed immediately or simultaneously for military assignments. Thus it can be expected that enrollees will continue to help carry on conservation programs contributing to the Nation's wartime needs. Meanwhile, under a recent agreement with the Red Cross, in possible disaster relief work the Corps' mobile organization is "on call"—in emergency the entire resources of men and equipment of the Corps can be mobilized on a moment's notice. In the past, the work of CCC enrollees during floods, blizzards, and hurricanes has been a potent aid in disaster relief work. Trained in first aid, experienced in the protection of lives and property, CCC enrollees can be a big help in war-caused disasters.

CCC enrollees working on military reservations are supervised by their regular technical service personnel, although now the work they do is planned by the military branch. This work is varied, but in general the jobs are akin to the tasks the enrollees ordinarily accomplish on their conservation assignments. Some are building target ranges, others are stringing telephone lines to artillery ranges. Still others are clearing landing fields for parachute troop-practice. Enrollees who have worked on forest projects know how to undertake the protection of timber stands on military reservations so that fires that may be started by saboteurs cannot endanger cantonments or destroy valuable training areas.

Erosion-control work is another important CCC job on military reservations. Time was an all-important element in constructing accommodations for the training of selectees. Other jobs had to wait. To build barracks and cantonment grounds to meet military specifications, it was sometimes necessary to level off slopes and to disregard, temporarily, the consequences of soil erosion.

But now erosion has become a pressing problem. Bald spots must be revegetated. Drainage systems must be constructed and protected against silting. Hurriedly constructed roads must be guarded against wash-outs and sloughing; this requires sloping the cut

banks and protecting them with vegetation. These are jobs that must be done as quickly as possible—not only to solve an immediate problem, but to prevent the greater subsequent damage that will result if the control work is delayed.

In doing this work the knowledge and experience of the camp technicians and foremen, as well as the skills developed by the enrollees, are useful. The techniques of the jobs are not new—only the locale. In employing these techniques and skills there is no essential difference between building a diversion outlet on a military reservation and within a soil conservation work area. Thus the armed forces, in selecting the CCC to do these noncombatant jobs of military importance, find the Corps a trained labor battalion already organized, equipped, experienced, and staffed with qualified technicians and supervisors.

Under the new work program, the same technical and administrative agencies participate in operating CCC camps. As before, if at any time it becomes desirable, the full facilities of the Corps, aided by its cooperating agencies, could still be utilized for improving the health of under-par selectees whose defects would be benefited by outdoor work and medical attention. Furthermore, with the CCC a going concern with experienced personnel and equipment on the job, the Corps would be available, should Congress desire its services, for an important role in the post-war adjustment period, using its facilities and the available manpower to continue the Nation's efforts to balance her national resources budget.

The need for continuing the conservation programs, to which the CCC has contributed so materially, is by no means over. The Nation is still on a declining resources base. The downward trend has been bent; not reversed. Recent surveys indicate that on the basis of present programs there are 3 billion man-days of constructive work ahead for the Department of Agriculture alone. This is work that can be wisely invested in the future of the country, work young men can do, and work that will contribute to their health, morale, and job training.

In 9 short years, the CCC has done a big job. It has provided work for 2½ million unemployed young men. It has utilized the manpower to help to protect and preserve the resources upon which the Nation now must call. It has built up the enrollees physically,

(*Continued on p. 222*)

These days never came back—thanks to the CCC. The corps gave youth a chance to do productive work, taught them skills, utilized them to improve the Nation's natural resources.

BULLDOZERS AND GRADE A MILK

By A. T. SEMPLE [1]

IT is increasingly apparent that grassland farming is especially well adapted to the New England and North Atlantic States because of the limited acreages of land suitable for cultivation and the huge market for fresh milk. In order to meet these conditions farmers grow as large a percentage of their roughage as is possible and ship in from the West grain and other concentrates to supplement their roughage. They have found, furthermore, that pasture is their cheapest feed during the growing season; and that the most practical and profitable procedure is to use for silage and hay whatever quantities of grass are not needed for pasture.

In choosing between hay and silage, farmers of the Northeast have found that while silage in general is a more expensive feed than hay, nevertheless there are times, especially the first cutting of grass, when weather conditions make it very difficult to put up hay satisfactory in quality. Consequently, it has become quite common to use the first cutting of grass for silage and subsequent cuttings for hay, while throughout the growing season care is taken to see that the cows have all the grass they can consume as pasture.

Most farmers using grass silage also use corn silage, and some feed them alternately each day. The levelest land is used to grow corn for silage—and on such land the cost is the lowest per ton for any silage. Much of the land used to grow grass for silage is too steep to be used often for corn. At Hampshire Hills Farms in Hillsboro County, N. H., W. P. Whiting reports that grass silage from the hills costs $5 per ton. His corn silage from a valley field cost $4.50 per ton, but from the hills it would cost $8 per ton.

Some farmers thought when they went into grassland farming that they would be able to dispose of their plows, but they were convinced that this is not feasible. One farmer, Victor Close, of Long Lane Farm, Fairfield County, Conn., has a pasture consisting principally of Ladino clover which in 1938 produced 4 tons of milk per acre with only a light feeding of grain—approximately 1 pound of grain to 6 or 8 pounds of milk. The next year this pasture produced only about half as much milk. Kentucky bluegrass had so completely crowded out the Ladino clover that Mr. Close found the pasture almost useless for milk production and since 1939 he has been using it for dry

[1] Head, pasture section, agronomy division, Soil Conservation Service, Washington, D. C.

A span of mules mowing small grain which is put in the silo with alternate layers of clover.

cows. As a result of this experience he knows that he must plow it up in the spring and plant oats and Ladino in order to restore its productivity. Incidentally, his grass farming is rapidly healing a waist-deep field-long gully caused a few years ago by excessive plowing. Mr. Close freely credited the staff of the College of Agriculture and the Storrs Agricultural Experiment Station of the University of Connecticut with all he had learned about the use of grass in converting the abandoned fields of a few years ago into a highly productive farm.

About 1929, Floyd Verrill of Middlesex County, Mass., began building pastures. Before that time he had kept his cows in the barn the year round and plowed and cultivated his land regularly to produce crops to be hauled into the barns. Up to that time he had been about breaking even. Now, after 12 years, he has practically all his tillable land in grass; he has stopped raising corn and plows only enough to renew his pasture; and he claims, in his own words, to be "making a dollar now and then." He summed up the situation by saying that he had found out he could no longer afford to plow his land for the production of feed crops, yet he must use it more intensively. At his home farm he is keeping 60 head of cows on 35 acres of tillable land. In addition to pasture this acreage supplies first-cutting grass for silage and later cuttings for hay. One 3⅞-acre pasture of Ladino, with some grass and other clovers seeded in August 1940 without any nurse crop, carried about 24 head of cattle as a day pasture for most of the summer. He plans to plow up such pastures for renewal about every 6 years.

A well-trained team of horses following a windrow made by an attachment on the mower and loading clover alongside the grain field.

One of the most important factors in connection with grassland farming in the Northeast is the reduction in labor costs and labor peaks. H. E. Babcock of Larchmont Farms, Tompkins County, N. Y., has gone a long way in solving the farm labor problem by extending the harvest season over 4 months—June to September. Thus he has eluded the pressure of planting a corn crop in the spring and getting it into the silo in the fall.

By using horse power, and the least expensive equipment practical for any ordinary farm, two men and a boy put up grass for silage as rapidly as it is ready for silage making—the boy does the mowing and helps with the other operations when he has time. One man works at the silo while another, using a team that is trained to follow the windrow, is loading and hauling in from the field. The grass is loaded on a wagon with a hay loader and dumped on the ground at the silo. The silage cutter is set down in the ground so that practically no lifting of the green material is required. A man standing on solid ground feeds the silage cutter much more readily than he could were he standing on a loaded wagon. As weather permits, this same crew can put up a considerable quantity of hay, and this further reduces the labor of harvesting, storing, and feeding the grass crop. At Larchmont, grass silage is used for growing and fattening hogs, poultry, and beef cattle.

Regarding the selection of forage plants for grassland farming there is great diversity of opinion, and many experiments are being carried on both by experiment stations and farmers to determine the best mixtures of grasses and legumes. On one plant practically everyone is agreed—that is Ladino clover. Opinions vary considerably, however, as to how it should be used. At the Beemerville substation of the New Jersey Agricultural Experiment Station, Ladino with orchard grass is rated very high. On poorly drained land Ladino with reed-canary grass looks very promising; one field this year has produced 10 tons per acre and there is a heavy growth on the ground to go into the winter. At this station Ladino is distinguished for its ability to live through drought periods as well as its adaptation to low land.

On Wood Ford Farm, Hartford County, Conn., J. J. Anderson rates Ladino very high for pasture and grass silage but feels that alfalfa yields more and can be more easily handled for hay where a satisfactory stand can be maintained. As a consequence, his upland fields are planted to alfalfa for hay; yet 5 percent of the mixture he seeds is Ladino clover and where the ground is too wet for alfalfa there is a perfect stand of Ladino. In the bottomland which is subject to overflow for a week or more at a time by the Farmington River, he is trying out four different mixtures with Ladino clover. Mr. Anderson expects, from his observations thus far, that Ladino and timothy for grass silage will be the answer to his problem on this bottomland.

On one Ladino field of 10 acres, Mr. Anderson put up 147,050 pounds of green material averaging 60 to 65 percent moisture from the first cutting. On another field of 5½ acres, seeded in the spring of 1939 with 3 pounds of Ladino clover alone, per acre, 13,850 pounds per acre were removed in the first cutting this year and 145 cow days of grazing per acre were obtained. On this farm corn acreage has been reduced 50 percent since the making of grass silage was started.

At Judd's Bridge Farm, in Litchfield County, Conn., the practice of using grass silage is strongly entrenched because it keeps the milk production at an even level from day to day and month to month. The herd does not vary more than 50 quarts per day within any one month, in the total production that runs as high as 2,000 quarts daily. George DeVoe finds that the cows

At the silo the load is dumped and the wagon is ready for reloading.

are kept in much healthier condition with the use of grass silage and that it is possible to get a high level of milk production with a much wider nutritive ratio in the grain. Formerly a grain ration of 16 to 18 percent protein was used, but now it averages from 12 to 14 percent. With the use of grass silage and this low protein feeding, including considerable home-grown timothy and clover hay of high quality fed throughout the summer, the cows maintain a high level of milk production throughout the lactation period.

Mr. DeVoe is very enthusiastic about Ladino clover. He has a mountainside field of waste land which has been cleared of brush, fertilized, and seeded at a cost of $65 to $70 per acre. The treatment included 2 tons of lime, 500 pounds of superphosphate, a 1941 spring seeding of oats, Ladino, wild white, alsike, and red clover and several grasses. He has obtained 150 cow days per acre of grazing from this pasture this year. However, he believes that Ladino clover with the one grass best adapted to the land and the forage use, is better than such "shotgun" mixtures. Like many other farmers, he has found that he can save much more roughage of high quality by making grass silage, because rainy weather and dew interfere with hay making. This farm lies along the Shepaug River and much of the land is very steep, but there has been no erosion problem since grass farming was adopted, except occasional bank damage when the river is at flood stage.

J. A. Cooper, of Sunset Farm, Worcester County, Mass., also has cut the percentage of protein in the grain mixture for his dairy cows—from 20 percent to 15 percent—by substituting grass and Ladino silage for corn silage.

Professor Parsons, of the Massachusetts State College, emphasizes the value of Ladino clover over the grasses. He points out that it is not wasted when growing conditions are unusually favorable and growth is several days ahead of the cattle. (When this happens to bluegrass, dairy cows will not eat enough of it to maintain a high level of production.) At this station Dr. W. G. Colby has under way an excellent experiment to compare the performance of several grasses mixed with Ladino clover. He is testing for grasses that maintain themselves adequately, produce well in the second and third cuttings and at the same time do not crowd out Ladino clover as Kentucky bluegrass has done in so many instances. Dr. Colby says that 3 to 5 years is about the average life of a good Ladino pasture in Massachusetts.

At the New Hampshire Experiment Station, Professor Ford S. Prince is working with productive

Feeding the ensilage-cutter, which has been set low to reduce lifting. Solid footing makes the work easier.

strains of timothy. Two of these in the preliminary stages appear very promising when seeded with Ladino clover because of their recovery after cutting for hay. In New England such second growth is called rowen. At this station excellent use is being made of a bush and bog disk harrow to prepare rough land for pasture seedings.

At the Turkey Hill Farm, Cornell University, Dr. Richard Bradfield is carrying on a remarkable demonstration in the reclamation of an abandoned field of Volusia soil. In the spring of 1940 the field was plowed and 400 pounds of limestone, 100 pounds of superphosphate and 1 pound of birdsfoot trefoil per acre was applied in 14-inch spaced rows by means of a cultipacker with a drilling attachment. This appears to be a very logical and low-cost first step in the establishment of a good pasture on poor land.

Ray E. Wing, county agent of Windham County, Conn., is an ardent believer in grass farming but has not given up corn and does not believe in pushing grass silage. He has about 4 acres of corn out of 60 acres of improved pasture and cropland. Like many other successful dairymen, he feeds a little hay all summer regardless of how good his pastures are, as he recognizes that the nutrients in good hay are cheaper and just as palatable as those in grass silage. He feels that the chief reasons for making grass silage are the occasional shortages of pasture, and weather conditions which interfere with the making of good hay. The possibilities of increasing livestock production with grass are illustrated by his experience in taking over the management of a neglected farm that at the time was producing only 9 loads of hay. Within a few years he has increased the yield to 50 or 60 loads of hay, and has increased the acreage and the productivity of the pastures on this farm. Obviously, this improvement has involved liberal use of fertilizers.

Another example of this kind comes from the 40-acre farm of William F. Bailey, Kent County, R. I. With a steam shovel and a bulldozer, 10 acres of stony waste land were cleared of trees and partially cleared of rocks in the spring of 1940. The field was fertilized and seeded to oats and Ladino in the same spring. The total cost of reclaiming the land was $250 per acre. This year the field produced $80 worth of grass per acre. As Mr. Bailey buys all of his hay, and as he stopped hay feeding when he turned his cattle on to this pasture, he was able to put a fairly exact value on the forage the pasture produced by checking the saving in his hay bill. At first he apologized for spending so much money per acre on land of such low productivity; but then, he wondered, where could a man invest $250 and get a return of $80 in 1 year?

Further proof of the importance of fertilizer on pastureland comes from the farm of Francis W. Peaslee, Merrimac County, N. H. On this farm of 200 acres there are 60 acres of land that might be plowed, but instead it is all in grass. Mr. Peaslee raises no corn and makes no silage; he depends entirely upon the hay he raises for roughage. Last year he sold 40 tons of hay from this farm and he intends to increase his production so as to sell 60 tons annually. He keeps about 50 to 60 head of cattle and milks about 25 cows regularly. To reduce animal disease and parasite problems he rotates his poultry with his dairy cattle on the same pastures, using some of them for poultry 1 year and then grazing with cattle for 2 years. He noticed that where the poultry houses were situated and the droppings killed out all of the vegetation, Ladino clover was the first plant to volunteer on the bare spots. Now he makes a practice of topdressing his pastures and meadows with complete fertilizer in addition to manure and poultry droppings.

This New Hampshire farmer says that before Ladino clover came into use he "couldn't make a success of grass farming because he couldn't grow enough white Dutch clover." Even with such excellent pastures, Mr. Peaslee feeds hay all summer. When he was asked about making hay from Ladino clover he replied that his cows were fond of it in any form, and no matter how brown it was.

Judging from the findings of experiment stations and the experience of farmers, we have ample justification for believing that we can swing a long way toward grassland farming and at the same time meet the wartime demands for agricultural products. These objectives can be accomplished by making greater use of grass and legumes in crop rotations along with proper liming and fertilizing, and by establishing good pastures and meadows on abandoned lands that are adapted to grass, and on misused land now in cultivation but which erodes too readily to be used regularly for cultivated crops.

UPS AND DOWNS OF A WYOMING RANCH

BY A. E. McCLYMONDS [1]

WALTER J. PETERSON is one Wyoming rancher to whom soil conservation is a very real thing—"a life-saver." He is more than glad to talk about it, anytime and any place. Four years ago the Peterson household was shrouded with the gloom that comes with successive years of failure. Debts had piled high; the family's hold on the ranch near Upton, in northeastern Wyoming, was nearly broken. The outlook was black indeed—but that was 4 years ago.

"We're back on our feet again," said Peterson happily, when I talked with him in the field during this year's wheat harvest. "It's all because of soil conservation . . . soil conservation and Dick Lewallen, your man at Torrington. It must be that, because I used to work harder to make a go of it than I have to work now, and I don't think I am any better farmer now than I was then, except that I know about soil conservation."

The Petersons' story, with its happy ending after bitter disappointment, is one to renew the faith of Soil Conservation Service workers in the axiom that the greater reward is the joy of helping others.

Twenty-two years ago Mr. and Mrs. Peterson settled on part of what is their present ranch—in those halcyon days when the Golden West was the land of opportunity, with lots of free land. Their son, now twenty one, has spent his life there. Hundreds of persons came from the shops and offices in that period, seeking escape, but the Petersons were not of these—they are farm people. Many settlers were disillusioned . . . found that farming in Wyoming was not like farming in more humid climes . . . and departed. Those

[1] Regional conservator, Northern Great Plains Region, Soil Conservation Service, Lincoln, Nebr.

A contour-planted shelterbelt on the Peterson farm; in a few years it is expected to furnish considerable protection.

who remained bought some of their land. Today Peterson, one of those who remained, like other ranchers in that territory, owns some of the land he operates and rents some—a section of State school land, some federally owned land, and a few private tracts belonging to those who tried and then moved on. In all, he operates a little less than 5,100 acres, most of which is grazing land.

In the heyday of dryland farming the Peterson crops were good, and so was life. The land was new then, capable of holding more of the rainfall. Prices for both grain and livestock were advantageous to the farmer during that post-World War period. But it was too good to last. The rainy spell ended, and the Petersons encountered conditions for which their experience had not prepared them.

"We know now that we were not farming the right way," Peterson explained, "and when the dry years came along in the late '20's the dryland farmers began to lose out. Those who depended wholly upon cash crops went first, but those of us who had some livestock were able to hang on. For years we borrowed money for seed, worked hard all spring and summer trying to raise crops, and then had to borrow money to buy feed for the livestock. There were years when we didn't raise enough feed for the chickens, and let me tell you, living didn't get any more pleasant. By 1937, I was about through."

After a little while he continued: "When you see everything crumble, everything you've built up in a lifetime, your thoughts can get pretty dark. There isn't a whole lot of fight left in a man when that happens, you know, and such a man is pretty easily led by promises. We didn't think so then, but I can see now that we brought on a lot of our own troubles. Dick Lewallen hasn't said so, but the things he has taught me about soil conservation have proved quite clearly that we should have had at least feed crops in some of those dry years."

Lewallen came into Peterson's life when the county agent, planning his county's extension demonstration

The first year he farmed by contour Peterson raised corn which stood about 6 feet tall and had 10-inch ears. At the same time, corn on land he had not yet brought into contour cultivation grew only 2½ feet tall and the ears were nubbins. Here is Peterson comparing a stalk of corn grown on the contour with a sample from a straight-row field.

The first step in the revamping of the farm was the planting of four pounds of crested wheatgrass seed. The seed had been procured by the county agent and was planted in the fall of 1936. There was enough of it to cover one and three-fourths acres in a five-acre pasture near the house. This plot was the source of seed for other areas, and now Peterson has a good stand of wheatgrass on about 125 other acres. In the spring of 1941 Peterson pastured 60 ewes in this pasture for six weeks, and although every ewe had two or three lambs they were able to produce enough milk for them. Here Peterson is shown in the wheatgrass a month after the sheep were removed.

farm program with Soil Conservation Service workers, pointed out that if there was anything to the soil conservation idea the Peterson ranch was the place to show it . . . there was a man—Peterson—known to be progressive and a hard worker who had some real problems. However, it was not a case of greeting each other with open arms; Peterson was really blocked by circumstances and, he confesses now, was not particularly enthusiastic, in the beginning, about the soil conservation program. Lewallen, already busy with extension demonstration farms eleswhere in eastern Wyoming, and heading up the Goshen Hole soil conservation demonstration project, did not care to hold out false hope in case Peterson needed more than assistance on the land. Nor did he feel that he could devote a lot of time on the place unless he was reasonably sure of effective cooperation. There was a little sparring, a visit to the ranch to talk things over; before long Peterson and Lewallen were "clicking" in a fast friendship.

"Contouring looked funny to me, and I must have been a little hard to convince at times," said Peterson. "But after the way Dick worked, I just couldn't let him down. Now I'm glad I didn't. From the time we started our first contour farming, we have been getting back on our feet. Let me tell you a funny one. The first year, 1937, was dry, but my corn on that contoured field grew 6 feet tall and the ears were 10 inches long. Other corn around here that year was about right for using a header, if it could have been harvested that way—only 2½ feet tall and mere nubbins for ears. Borrowing money for stock feed was about over for me. I showed my corn in town, and the people just wouldn't believe that I had raised it that year, that I had a whole field of such corn. Only a few people bothered to come out to see for themselves."

Contouring of this first field was, of course, only the start at reorganizing the whole ranch, a process that still is going on. Peterson was too much a cash-grain farmer; he needed a broader income base. He would have to produce more feed for the larger numbers of livestock he needed to balance his operations.

Plans for the cultivated lands aimed toward producing more crops on less land and consolidating the cultivated areas for economy in operation. Peterson was farming 500 acres, of which 338 acres were in wheat, in 54 badly scattered fields. Today he is farming only 300 acres in less than half that many fields, and he plants only 69 acres to wheat. Only 43 acres of the cultivated land have not been affected by the reorganization, and as soon as a couple of gullies are obliterated the rearrangement will be completed. Then all cropland will be close to headquarters and in two units, one on each side of the highway. All will be contour farmed—strip cropped on the contour. Peterson has remarked on how the rearrangement already has cut down travel and hauling.

Work to improve the grazing land to support the livestock Peterson needs has gone ahead rapidly. It includes crested wheatgrass seeding on lands taken out of cultivation, seeding on depleted range lands, building stock water structures, water spreading, deferred and rotation grazing on native ranges.

Grass seeding actually was the first step toward revamping this ranch—when the county agent secured some crested wheatgrass seed from the Mandan, N. Dak., nursery of the United States Department of Agriculture in the fall of 1936. There was enough to make a seed plot on 1¾ acres in a small pasture between the house and the highway. This small plot already has furnished seed for 108 more acres that have been put in crested wheatgrass.

One thing about the reorganization that pleases Peterson is the fact that he is farming less land and raising more crops.

"This year has been like old times, with rains just right and all that," he remarked, "but I raised more crops this year on 300 acres than I ever raised on the 500 acres I used to cultivate. Remember, I farmed during those good years before the dry times and when the land was newer. It's hard to believe, but it's true; and I am storing up good livestock feed reserves for the first time."

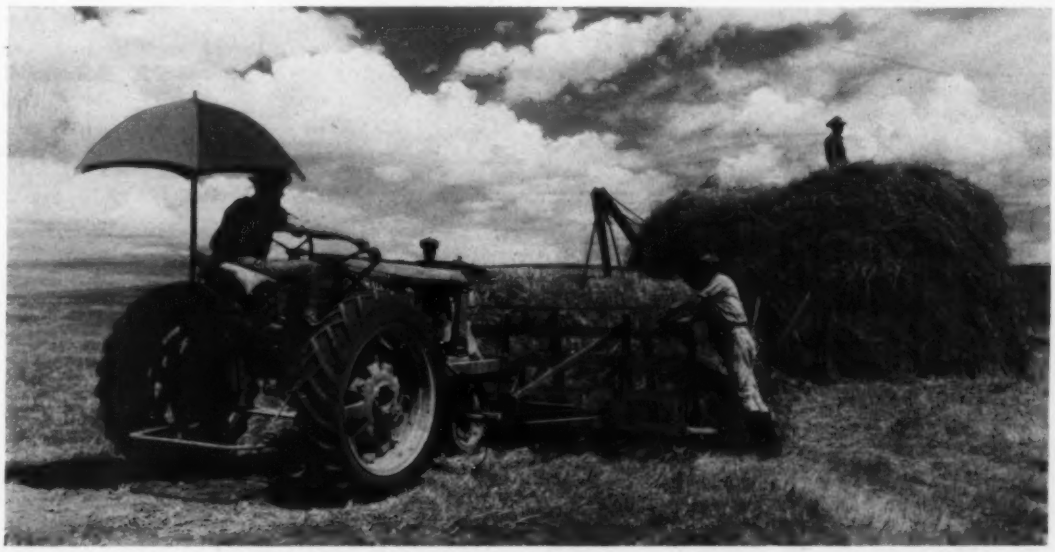
The 43 acres of Peterson's cropland which are not yet farmed on the contour—part of his best land—give opportunity for some interesting comparisons even in this year of "just right" rainfall. Peterson reports some impressive yields: the 56 acres of contoured wheat yielded 29 bushels an acre, compared with 23 bushels an acre on the 13-acre field not contoured; the 39 contoured acres of oats produced 26 bushels per acre, compared with 18 bushels an acre on the 15 uncontoured acres; and the 24 contoured acres of barley yielded 24½ bushels an acre while the 15 uncontoured acres produced only 18 bushels per acre. All the corn and rye was on the contour, the former producing 35 bushels an acre and the latter 20 bushels an acre. Good crops this year on uncontoured fields, better ones where farmed on the contour.

"Those yields startled me," Peterson remarked, "because the grain on the land that wasn't contoured looked every bit as good as the grain on the contoured fields. But there are the figures: I was anxious to know, and was careful to harvest each field separately and keep an accurate record of what I got from each. I'm not guessing when I say that contour farming paid me several dollars an acre even in a year like this."

A good-sized garden is part of the scheme of things at the Walter J. Peterson farm. Here Mrs. Peterson hoes in the garden.

Add these yield figures for 1941: Rye hay taken from a 21-acre contoured field totaled 31 tons; the oats straw from the fields mentioned above amounted to 54 tons; 6 tons of hay came from 7 acres of sweetclover; 23 acres of crested wheatgrass produced 945 bushels of seed; and 46 acres of crested wheatgrass yielded 40 tons of hay.

"But it wasn't years like this that broke so many and put me in the position of almost losing this place," Peterson reminded me. "It was last year that really convinced me that contour farming is about the best crop insurance you can get. Last year was as bad as any I have ever seen. The only rain we had came the



Peterson, his son, and a neighbor stacking rye hay which was grown on the contour on this upland farm.

last of May, but my corn grew over 6 feet tall and had good-sized ears. The barley amounted to 300 bushels; oats the same, and the wheat 500 bushels. I produced 120 tons of feed for the livestock in 1940, a year that was as bad as any—I believe it was about the worst year—and still I raised enough feed. That proved to me that there will be mighty few years, if any, when we can't raise a crop; and I'll have enough feed reserves to carry on if harder years come. We'll not have to borrow to get stock feed or to dump stock on the market."

Progress on the grasslands has been as impressive, although less spectacular, as on the cultivated areas.

"This crested wheatgrass is one of the most important things on the ranch," Peterson observed. "It starts growing and can be grazed considerably before the native grasses are ready, and it greens up after every shower. It really can take it, too. Just this spring, for instance, 60 of my ewes had twin or triplet lambs. I moved them to that crested wheatgrass plot beside the house and kept them there for 6 weeks. Although every one of those ewes had two or three lambs, they were able to produce enough milk. Not one of the lambs was lost, and they're large for twins and triplets."

Thirty-seven acres of the crested wheatgrass is divided into five pastures, each with a shed, for a lambing set-up. Lambing is done in the first pasture, and each day the lambs are moved progressively from one pasture to another. On the sixth day they go out into the big pasture, or range.

"We can keep track of the lambs better," Peterson explained. "We know, for instance, that those in the third pasture are 3 days old, and having them in lots where there are shelters cuts down losses. Last year this plan was worth a good deal. There was a bad storm during lambing. Some of the neighbors' losses ran as high as 150, but we didn't lose one because of storm."

Peterson likes to tell about Lewallen locating the stock water dam in the rented school land section, about a half-mile east of the house. Peterson knew just about where he wanted the dam, but could see no way out but to construct a spillway.

"Dick got out his field level and started looking around, and it was only a few minutes later that he called over to me: 'Better put it a little farther upstream, Walt; you've got a dandy natural spillway.' I couldn't see it, so Dick had me look through the level. Sure enough, right through the best grassed part of the bottom land was a broad gentle channel."

Peterson built the dam, a simple and inexpensive job. The spillway takes the overflow water from the head of the pond and spreads it out over the pasture below the dam. The system has operated several times this year and the grass is something to behold.

Tangible evidence of the improvement of Peterson's range land has shown up gradually. In 1937 he had 300 sheep, 6 head of cattle, 4 horses and 40 hens. The range was in poor condition and hardly adequate for even that amount of stock, and he had not been able to raise enough feed for them. His lamb crop was only 70 percent that year.

Within the last year he has added to his livestock—with the help of the Farm Security Administration and in line with Lewallen's recommendations to get a better balanced unit—and his grasslands had improved so that he could care for more animals. He now has 915 ewes, 300 lambs, 18 cattle, 6 horses, about 300 laying hens. He had a 98-percent lamb crop last spring.

How are the animals faring? Well, Peterson has some figures on this too, although only for the last 2 years.

"My lambs were 10 pounds heavier this year than last, which means that on the basis of present prices they were worth $1 more per head," he pointed out. "Then, the 1940 wool clip was 7½ pounds per sheep, compared with 8¼ pounds per sheep that I got this year.

"So, here we are," the rancher concluded, "with wheat filling about every building on the place, even the turkey house; more livestock than ever and plenty of feed for them. We have a good garden, lots of chickens, just about everything a man could want on a farm. We are paying off those debts that had piled up so high, and paying them off fast, and we won't have to borrow money to carry stock over bad years any more. Now we're looking ahead to improving our home, and our son has come to think that farming is a good thing after all."

THE CCC MARCHES ON

(Continued from p. 214)

strengthened their morale—the thousands of ex-enrollees now in the armed forces will be more physically able and more determined to defend the country they have helped make richer and stronger. Thousands of enrollees learned skills in the CCC. Many of them are now in defense industries—some using the resources they helped to conserve to make matériel for its defense.

Another year has seen the value of the CCC augmented, and the past accomplishments of the CCC multiplied in importance. The investment in youth has become a richly productive investment in the future of the country.

WHAT OF THE WESTERN FRONT?

BY FRANK KIMBALL [1]

THE SEVENTEEN western States occupy a major position in the food for freedom battle front. They have the land, water, and climate to assure maximum yields of agricultural and livestock products of select qualities. Since our entry into the war, the demands for increased food production have emphasized to a greater extent than ever before the importance of the irrigated lands within these States. As a result of this all-important incentive it is expected that farming and ranching operations in these areas will be geared to meet their share of production requirements.

Obviously, some redesigning of operations and practices will be necessary on many farms and ranches in order that the most economical and efficient methods may be adopted to obtain the desired results. Required increases in amounts of sugar, poultry, dairy, and garden products, however, will necessitate more intensive operations of the kinds most suitable to irrigated farming areas. In this work every ounce of productive labor is important. None should be wasted and, without doubt, successful campaigns against soil and water losses will constitute one of the most effective steps in achieving the production objectives.

Water is the limiting factor for irrigated agriculture, and water supplies are dependent upon the uses made of watershed lands. Adequate protection of water supplies must come through sustained management of watershed lands in the interest of land and water resources, and through measures designed to check depletion of the vegetative cover, retard run-off, and prevent soil erosion. For these reasons sound agricultural programs in western areas are directly concerned with problems of beneficial use of water.

Western water problems are numerous and complex. Many of the most serious problems are the result of haphazard and undesigned growth of irrigated agriculture and disregard of its economic influence on other watershed uses and problems. Early efforts of individual farmers, as well as groups of farmers, were confined mainly to diverting small streams over adjacent valley lands for crop use by simple and inexpensive methods. When the success of this type of agriculture became known, land values increased, larger and more difficult projects were planned and constructed, irrigation districts came into existence, and legislation was enacted to govern the appropriation and use of water.

With the gradual adjudication of water rights to individuals and companies on the basis of beneficial use, the importance of the vast network of diversions, storage reservoirs, and distribution systems became fully established. These water rights have been vigorously protected, even though in many instances the total quantities of water for which filings and appropriations were claimed greatly exceeded available supplies in some streams. Many diversions and many more miles of canals were constructed than were necessary to serve the total acreage irrigated. These factors contributed to excessive transmission and other losses of water to the detriment of all appropriators from such streams. In a few areas, large Federal projects have now eliminated some of these unsatisfactory conditions, but the bulk of the improvement still to be done is in areas where large projects are not feasible.

Wasteful methods of conducting water or applying it to the land were commonly practiced by early irrigators because such methods could be employed without causing material injury to other land users. With the further development and extension of irrigated areas attention was focused more sharply upon the role of water, and it soon became established that no appropriator had a valid right to use wasteful methods in exercising his water right. While much improvement in abusive uses and methods has been accomplished, their correction is still the most important problem to be solved in many of these western areas. A tremendous amount of rehabilitation and improvement work remains to be done on diversions, storage reservoirs, distribution systems, and to irrigated lands, to bring about an equitable apportionment of water among the users of the various streams, and to meet the requirements for economic and beneficial use as based on the rights and needs of all the users. In many areas this improvement work will require organized group action, and in such areas it is of utmost importance to the individual water users.

The water problems we are facing in these irrigated areas are numerous; they vary widely between different irrigation districts as well as between individual farms in these districts. Some of the problems common to large numbers of farms are centered around the following: poor distribution systems; improper land preparation; wasteful irrigation practices; needs for

[1] Head, irrigation section, engineering division, Soil Conservation Service, Washington, D. C.

fertilizing and for soil-building rotations; need for weed control.

Solution of these problems requires adoption of farming methods and soil-building practices consistent with the kinds of crops grown and the variability of the soils soils in each field. The farmer must examine and study his soils to learn their physical characteristics, capabilities, and requirements for plant food. In the application of water to crops the arrangement of the farm and field distribution systems, including borders, furrows, corrugations, and other related works, should be made such that an even distribution of water can be supplied to the root zone of the plants with the least waste of water, soil, and plant food. A knowledge of the development of the root systems of the various kinds of plants is necessary in order to apply the right amount of water to secure the desired moisture penetration into the root zones. Visual tests made to estimate the soil moisture content in various parts of the fields will become easier as irrigating experience is gained, and will help the farmer to become more adept in determining when additional water should be applied.

The use of too much water may drown the crops, cause waterlogging, leach out valuable plant food, and in many instances cause soil erosion. The times and amounts of water deliveries at the farmer's headgate will have a major influence on his willingness and ability to make the best use of it. This is one of his problems that can only be solved through organized group action with other water users who are dependent on the same source of supply. In many irrigation districts similar problems have been successfully met through practicing rotation deliveries of water, but even this method will require some modification to meet special crop needs. In any given area the success of irrigated farming depends largely upon the continued cooperative action among all water users in the interest of good soil and water management.

In some of the irrigated sections weather conditions between irrigation seasons are severe and allow the farmers very little time to make needed repairs and improvements. Now that it is necessary to restrict the production of certain new implements and machines, more alertness will be required on the part of all farmers to keep their operating units in good working condition.

Nothing short of all-out intensified efforts on the part of all land users should be the contribution of each to help conserve the national resources so vitally needed at this time for the production of food. The continued protection of all soil and water resources will largely determine the future welfare and security of the Nation.

FARM CONSERVATION PLANNING FOR WAR NEEDS

(Continued from back cover)

necessary in the "food for freedom" program. This situation has raised several questions relative to conservation. For example, is increased production of agricultural products inconsistent with conservation? Since agriculture must give first consideration to increased production for war needs, will we have to forget about conservation for the time being? Since winning the war is of first importance, are we justified in countenancing destruction of soil resources?

The 1942 production goal.—Before answering these questions, let us look at several aspects of the present situation. There is a need for increased production of many agricultural commodities for increased domestic use and the support of our own armed forces, for lease-lend aid to our allies, and for the building up of reserve "stock piles" to meet future emergencies.

Production goals have been established for 1942. These goals call for an increase in livestock and livestock products of from 5 to 15 percent over 1941 production—with a 14-percent increase in hogs, 7-percent in milk, and 8-percent in slaughter of cattle and calves. Increases of 10 percent are needed in the several classes of poultry and 13 percent in eggs. A 54-percent increase is needed in soybeans and a 155-percent increase in peanuts. Commercial truck crops should be increased about 10 percent. Dry field peas should be increased 73 percent and dry beans 13 percent. Corn and cotton should each be increased 8 percent. Acreage restrictions on sugar beets, sugarcane, and rice are removed. Supplies of wheat are still excessive, however, and the acreage of this crop should be reduced 12 percent, this being the only farm crop for which the 1942 goal is less than the 1941 production. These are the goals for 1942. It is possible that still larger goals may be established for 1943.

It is probable that the war will last longer than many of us like to contemplate. Even after the close of hostilities, we will need to produce large supplies of agricultural products in this country until the devastated countries can get their land back into production. Therefore, this is not a 1-year program. We should probably plan on increased production for at least 5 years. After the war and the post-war adjustment period, we will have need for production for domestic and export demands. Even though we must run in high gear for a few years, we must keep

our agricultural machine in proper condition for continued use in more normal periods.

Increased production is not inconsistent with conservation.—On the other hand, much more consideration of land-use capabilities and maintenance of the productive capacity of the land is a necessary component part of the efforts to win the war and the ensuing peace. Rather than throw conservation "out the window" along with "business as usual," it should be given greater attention at this time in order that we may meet the present production needs and still keep our plant in proper order to supply the future needs of the Nation.

How then can this increased production be achieved within the framework of conservation? The present situation calls for more intensive use of good tillable lands. The admissible intensity of use is dependent on the use capabilities of the land. Therefore, widespread attention, in the allocation of production goals to States or counties or to individual farms, should be given to land-use capabilities. The same is true in determining the part of a particular farm upon which the increased allotment should be produced.

Good lands can be used intensively.—In increasing the production of clean-tilled crops, first attention should be given to maximum intensity of use of land in capability class I. Land in class I consists of level or gently sloping areas, generally fairly high in fertility, which can be cultivated safely and permanently without special practices for control of erosion. Even though this class of land were kept in continuous clean-tilled crops, it would not be destroyed by erosion. It is true that continuous clean tillage probably would reduce the organic matter content and change the soil structure and thus eventually reduce yields; but in an emergency it probably is advisable to capitalize on some of the stored-up fertility of these lands. Since the soil is not lost through erosion, the organic matter can be restored at a later date. It is known, however, that on some of the soils in this class the growing of a legume sod crop once in 4 years will make possible larger total production for the remaining 3 years than would be produced in 4 years without the legume sod crop. On such soils, the growing of continuous clean-tilled crops even for a 5-year period would be questionable.

Sloping lands must be safeguarded.—On more rolling cropland falling in capability classes II and III, some farmers can increase acreages of clean-tilled crops, with greater total production, provided increased use is made of conservation measures such as contour tillage, strip cropping, and terracing. Such practices make possible the use of a higher proportion of intertilled crops in the rotation than otherwise would be justified. Some farmers who are now conserving their soil resources by the use of a long rotation with a high proportion of grasses are in a position to increase the acreage of intertilled crops by intensifying the use of other control measures.

On many farms in this class, however, production cannot be maximized by inereasing the acreage of intertilled crops. It is on these farms that the use of conservation practices offers most in the way of increasing production. An increase in intertilled crops at the expense of legume sod crops might actually reduce production over a 5-year period.

Increases in yields as a result of water-conservation practices are larger than is commonly recognized. For example, records kept in the Southern Great Plains show that contouring and level terracing increased yields of beans from 165 pounds per acre to 243 pounds, or 47 percent. These practices increased the yield of wheat from 11.5 bushels to 15.1 bushels per acre, or an increase of 31 percent. Contouring alone increased the yield of grain sorghums from 461 pounds per acre to 589 pounds, or 27 percent; while terracing in addition to contouring increased this yield to 723 pounds per acre or 57 percent more than was obtained by cultivating up and down the slope.

While increases in yields as a result of water-conservation practices are most spectacular in areas where rainfall is very limited, they are by no means confined to these areas. For example, contour listing of corn in Southwest Iowa increased corn yields 46 percent during the 3-year period, 1933 to 1935. An even greater percentage of increase occurred during the very hot and dry season of 1934. While lesser increases due to contour tillage might be expected on flat-planted corn than on listed corn, and while lack of moisture may limit the yield of corn in a lesser proportion of years in the eastern Corn Belt than in the western part, nevertheless many observations seem to justify an estimate of 20 percent increase in corn yield per acre due to contour cultivation in a large proportion of the Corn Belt. Thus, in those areas, the use of contour cultivation on the present corn acreage would increase production as much as would a 20-percent increase in acreage without contouring. Furthermore, this increased production would be obtained with but little increase in farm labor and machinery which would be required with increased acreage.

Use legumes for feed and soil fertility.—One of the best methods of increasing total production of crops for livestock feeding, even for a short-time period, is to increase the acreage of legume sod crops. Such crops

not only increase yield of row crops that follow the turning under of the legumes, but they also provide livestock feed. Greater amounts of dairy products and beef are needed. Beef and dairy cattle require roughage as well as grain. In some cases, larger amounts of digestible nutrients per acre may be produced in legume hay than in grain. For example, one and one-half tons of clover hay contain 1,500 pounds of digestible nutrients while 30 bushels of corn contain 1,400 pounds. The kind of hay produced is important if one is considering maximum production of livestock feeds. The legumes contain more digestible nutrients than do the grasses. For example, a ton of alfalfa hay contains 1,032 pounds of digestible nutrients, a ton of clover hay 1,019 pounds, while a ton of timothy hay contains only 970 pounds. On many soils additional lime and fertilizer are needed for the production of legumes. Increased use of lime and fertilizer is needed especially during this period of emergency in order that the quality and amount of hay may be increased and also that the yield of grain crops may be maximized.

Pasture land in accelerated production.—Like crop lands, pasture lands also should be utilized to maximum efficiency. Where pasture is now located on good tillable land, with a productive capacity that can be maintained in cultivation, it may be that in some instances it will be desirable to put this land in rotation crops.

Certainly nothing can be gained by breaking up rough pasture land that is not suited for cultivation. To do so would result not only in inefficient and high-cost production during the next few years, but in erosion that would cause irreparable damage and thereby reduce the possibilities of efficient future returns from such lands. The destruction of lands necessary for the permanent well-being of the Nation must be avoided. "What doth it profit a nation if it wins the war but loses its basis of future prosperity."

Since, in the food for freedom program we need increased production of livestock and livestock products, and since pasture is one of the best and cheapest sources of livestock feed, increased attention should be given, especially in this period, to increasing the carrying capacity of pasture through proper management, including liming, fertilization, mowing, and proper grazing. The productive capacity of many of our permanent pastures can be increased from one-half to threefold through such management. Increased use of supplementary pastures for grazing during the months when the growth of permanent pasture is slow will increase livestock production by providing a more constant month-to-month supply of grazing.

The farm production program must be balanced.—Now, while production goals are being established and farmers are being asked to increase production of certain commodities, we should give much greater attention to proper balancing of the production program. Not all farms and farmers are equally suited to a flat percentage increase in the production of the several commodities for which there is increased need. To some extent this has been taken into account in establishing production goals and in breaking down the national goals into State and county goals, but it should receive additional attention in distributing township or community goals to individual farms. Probably little can be gained by getting the dairyman who has but little knowledge or experience in hog production to produce more pork, or the hog producer to produce more dairy products. If, in a certain community, a 10-percent increase is needed in both dairy products and pork, probably the dairyman who has the farm, equipment, and knowledge suited to dairy production should increase dairy production 20 percent and not increase pork production at all; while the hog grower would increase hog production by a like amount and dairying not at all.

As I pointed out in a previous article,[2] the farm program should be planned in accordance with the needs and adaptabilities of the farmer as well as the needs and adaptabilities of the land. In this case, we should consider the individual farmer's share of the needs of the Nation for increased production as a part of the needs of the farmer.

In planning individual farm programs, the farmer and those technicians who are planning with him, should consider not only what products can be increased logically on the particular farm, but also the means of obtaining such increases. For example, an increase in numbers of dairy cattle is not warranted if the feed for these cattle is not adequate. Nor does increased production of dairy products necessarily call for an increase in numbers of dairy cattle. If pasture is inadequate for the present dairy herd, or if hay is scanty in amount or poor in quality, first attention should be given to eliminating these bottlenecks. In many instances more beef may be produced in overgrazed areas if the number of cows is reduced. More corn can be produced even during the emergency period if fewer acres are planted, on the contour and following sod legumes, than if corn acreage is increased promiscuously without the more important contour and legume considerations.

(*Continued on p. 232*)

[2] Soil Conservation, January 1942. "Consider the Farmer as Well as the Farm."

MICHIGAN DISTRICT GROWS MILLIONS OF TREES

TWO years ago on May 1, 1939, all that the South Muskegon Soil Conservation District had was a board of directors, two Soil Conservation Service farm planners just reporting for duty, and 50,000 acres of sandy land that needed attention—needed it badly and at once.

Twenty days passed—and the district had in actual operation a million-tree nursery. Then the spring of 1941 came around, and South Muskegon could boast of 800,000 "2-0" trees from that original nursery lay-out.

That this Michigan district was able to lay out nursery beds and plant a million seeds in less than 3 weeks, from scratch, is explained by the simple fact that the farmers were willing to roll up their sleeves and go to work. The district chairman, Olaf Hostad, had some land he did not need, so the farmers turned it into a nursery. They made the beds, planted the seed, built shade panels, installed irrigating equipment, weeded the sprouting seedlings.

Last fall 85,000 red pine seedlings were lifted from the original seeding and planted in open fields. The actual cash outlay to produce this number of seedlings, plus the 800,000 lifted in 1941, was approximately 50 cents per thousand. Costs were kept at this remarkably low figure through use of donated labor. Persons incarcerated in the local jail for minor offenses were made available by the sheriff. The Welfare Commission arranged for labor from relief rolls. The National Youth Administration contributed by approving a nursery activities project. Muskegon high-school students, anxious to learn, contributed their time, as did many farmers. Some local labor was hired at 25 cents per hour.

In the spring of 1940 the South Muskegon directors started all over again—they seeded enough beds for another 2 million trees. A year later they duplicated this. They will take off pine seedlings at the rate of 2 million a year, for use on the 50,000 acres of sandy land that once grew the finest of forests and now must be coaxed back under the same kind of protective cover. This district has been busy with transplanting, too. In 1940 the men lined out 780,000 seedlings; increased this to 1,250,000 in 1941, speeding up the job by adapting a celery planter. This machine cut transplanting costs around 70 percent.

The 12,000 acres of blown sand, plus 40,000 acres not yet out of control but in need of stabilizing, will require at least 50 million trees for complete reforestation. The South Muskegon people know that the 5 million already produced or started will not finish the job, but with their goal in sight they are going forward, steadily and enthusiastically, with their plans.—F. E. Charles.

FIELDS PLOWED IN BEDS FOR DRAINAGE

R. W. Rogers, engineer of the Bolivar, Tenn., CCC camp, has reported unusually good results from the use of "bedding" and field drains in a field of bottomland on the John Wilson farm lying back from Hatchie River on Muddy Creek.

Twelve acres of this field were cleared of brush and scrub timber in 1934 and 48 additional acres in 1936. Each year thereafter, through 1939, the owner tried to grow corn, but each year he failed almost completely because of poor drainage; some of the corn was so poor that it was not worth gathering, and other portions of the field yielded very low amounts. In July 1939 when the soil was mapped—it is of the Chewalla and Alamo series—the fields were wet and in some spots miry from standing water. The natural fall of this land is about 0.2 to 0.3 foot per 100 feet.

The plan devised later for Wilson's farm included shallow field drains and "bedding." The beds were about 66 feet wide. They were formed by plowing to the center, leaving a dead furrow between beds. The dead furrows were cleared by making two rounds with a V-drag, thus forming a shallow lateral drain to feed into the main drain. In 1940 a corn crop considered good for the locality was grown on these bedded fields; two small measured plots yielded 39 bushels and 44 bushels per acre respectively.

Mr. Wilson is greatly pleased with the results. He estimates that his corn yield this year will be about the same as last year's crop. He realizes also that the placing of these bottomlands in cultivation will permit a less intensive use of adjoining hill lands.

WAR AND SOIL CONSERVATION

By ANGUS McDONALD [1]

AN ARMY marches on its stomach; its feet won't move fast if its stomach is empty. This means that a war can't be won without plenty of food. It also means that the soil must produce more. And sometimes producing more food isn't good for the soil.

For example, during the first World War we plowed up a lot of new land that shouldn't have been put in crops at all. Eleven million acres of grassland in Nebraska, Kansas, Colorado, Oklahoma, and Texas were plowed up for the first time. The annual acreage in wheat increased over all the country from 47 million acres (average annual production, 1909–13) to 74 millions in 1919 and the total acreage in crops increased by about 40 million acres.

One result of all this plowing up was the Dust Bowl. Thousands of farmers saw their crops smothered with dust and their best soil blown away. In 1934 there were such terrific dust storms that you couldn't see 25 feet. And when the dust settled a little, as far as you could see was an expanse of sand and soil piled in drifts. The plains were dotted with shacks and deserted houses and sometimes you would see skeletons of animals that had died from thirst and starvation.

All this land had been plowed up during or shortly after the World War. It had been put in $2 wheat. After the dust storms some of the blown-out farmers would have been lucky to get $2 an acre. The long dry spell had come. When the soil was first cultivated it was rich in rotted vegetation. But by 1934 it had changed. It had a fine texture by then and the organic matter that had pasted it together was gone. There were millions of acres like this.

Some of it was so eroded that it never would be any good again. Some of it would raise a crop when another wet period came. With a wet period would come another wave of farmers who would plow up the dry land and cultivate it until the inevitable dry period came again. Then they would leave. This has been the history of the dry country.

In 1934 they left by the thousands from sections where only hundreds had left before. I've seen them heading west with their dilapidated trucks and cars packed to the gills with their household stuff. In 1934 it was much worse because much more of the dry land had been plowed than ever before, the soil was in a more blowy condition and the dry period was longer. High prices, wet years, the Government campaign for wheat, for food to the Allies, caused the Dust Bowl settlers to ruin their land.

Another result of wartime plowing was water erosion. In the South and in other parts of the country the farmers put their steep land in row crops. Some farmers, even in the South, had only grown a few acres of cotton. They had kept their most sloping land out of row crops.

The war changed all this. You cannot argue against 40¢ cotton. Many of these farmers made $100 an acre on cotton land. They made big money in 1919, but in 1920 the price went to 6 cents and they had to borrow money at the bank. Many of them finally lost their farms.

They had been pulled into the cash-crop rut by high prices. Then one or two failures and they found themselves in debt. Once in debt they had to keep on raising cash crops such as wheat, cotton, or tobacco, and the land got poorer than ever. In many places it became so gullied that it was finally abandoned.

In some ways the United States is in a similar position in this war. We are feeding about one-fourth of the population of England. The Secretary of Agriculture has asked the American farmers to produce in 1942 the greatest crop in history. If these plans work out, milk production will be increased from 117 billion pounds in 1941 to 125 billion in 1942. Pork production will be increased from 17.8 billion pounds to 18.7 billion pounds. Beef production will be increased 15 percent over 1941, and chickens 13 percent.

We will send to the British in 1942: About 4½ billion pounds of milk; one-half billion dozen eggs; 18 million pounds of poultry; 1¼ billion pounds of pork and lard; 1¼ million tons of fruit, and 2½ million cases of canned vegetables. All of these products will feed about 10 million people and amount to from 6 to 8 percent of our own production.

Plans have also been made to increase the amount of food going to our own people. Fifty percent of the draftees were suffering from some physical or mental defect and many of these defects were caused by an inadequate diet. War and the threat of war will, as 25 years ago, place a greater burden on the soil.

There are two important differences though. One is that the people and the Government have become soil-erosion conscious. We have learned how to con-

[1] Associate information specialist, division of information, Soil Conservation Service, Washington, D. C.

serve the soil and at the same time maintain and even increase production.

The country became aroused over the menace of erosion when Dust Bowl soil was lifted high into the air and blown clear across the country and deposited in the Atlantic Ocean. The Soil Conservation Service was established and for the first time the soil conservation effort became national. Before that time a beginning had been made. A small amount of money was appropriated by Congress in 1930 and 10 soil and water conservation stations were started.

After 1935 erosion was attacked on a broader scale. Many thousands of experiments were carried out in places most afflicted by erosion. Tests were made of soil and water losses under different crops and conditions. Terraces were built, check dams were developed, new crops were tried out that would prevent erosion and still give the farmer a living. Rotations, strip cropping, different methods of cultivation were tested. New machinery was invented both for the erosion laboratories and for the field. Instruments were designed, invented, and developed that would measure how water acted and how soil acted in water. Demonstration farms were started in every State and the cooperation of State experiment stations was utilized.

Attempts were also made to get the farmers to apply soil-conserving crops and methods. The knowledge and experience of former years was utilized.

Before this time erosion-control efforts had been largely haphazard. Individuals had been trying to stop erosion for over a hundred years but they had not been successful in getting farmers to apply their methods. And sometimes their methods had been wrong. Most of their terraces were built with too much fall and frequently more erosion was caused by a terrace than was prevented. This knowledge about terraces was used as a check against the new experiments.

The conservation movement got under way slowly. It was hard to change us from a Nation of soil wasters to soil builders. But more and more farmers became soil conservationists. They applied the knowledge gained by research; they profited from the help the Government gave them in advice, materials, and money.

The men at the State experiment stations—many had been interested in erosion for years—cooperated. Often they took prominent places in the national organization. Because of their knowledge of soil and people their help was invaluable.

Year by year the number of soil conserving farmers increased. Year by year the methods worked better, more acres were put in soil building crops.

Soon groups of farmers united into districts, and States passed soil-conservation laws that gave these districts legal rights as well as help from the State governments. The area of land in soil conservation districts grew by leaps and bounds. Hundreds of thousands of farmers became converted to the soil-conservation gospel and signed 5-year agreements. Farms under these agreements were planned, land was classified as to its erodibility, rotation systems were worked out, and terraces, dams, and other structures were built by the farmers with the help of the Government.

The growth of the district idea was an example of how the American people could in a democratic way organize to prevent erosion. This, in a sense, was an answer to the dictators who said that democracy wouldn't work. By the end of 1941 there were 420,000,000 acres in soil-conservation districts. America became almost overnight a Nation of soil builders instead of a Nation of soil destroyers. This is one difference between 1917 and 1941. There will be no such criminal waste of the soil in this war crisis as there was before.

There is another important difference. This time no new acres that should be in grass and trees will be plowed up if the Department of Agriculture can help it. Although more milk, eggs, fruit, vegetables, poultry, pork, and beef are needed for Britain and for our own people, the increase in acreage of these products is more than offset by acreage reductions for wheat and cotton. We have too much of these products. There is enough wheat to last almost 2 years if we don't grow a blade in 1942. On August 1, we had a cotton carry-over of 12,200,000 bales. The war blitzed the cotton exports.

Now the old gullies are filling up and not so many new ones are being started. The Government is no longer clamoring for wheat and cotton, for the farmers to plow up pasture and meadow. There is plenty of erosion, yes, but not so much as there was. The water has been slowed a little. War has come again, but new acres probably won't be plowed up this time.

THIS STOCKMAN BELIEVES IN SOIL CONSERVATION DISTRICTS

The stockman is William Lambert, of Piniele, Montana. He is the author of the address, reproduced in the following pages, which was delivered at educational meetings held to discuss formation of the Box Elder Soil Conservation District in Montana. George S. Severson, County Agent, Fallon and Carter Counties, Montana, sends us this statement about his "good friend" Bill Lambert:

"Mr. Lambert is a bona fide stockman, lives down in the south end of Carter County, near Piniele. He owns several sections of grazing land and runs quite a few head of cattle. At present he does not have very many stock as he sold down last fall but he tells me that he will buy back as soon as the prices seem right to him. He has not been to college—in fact, I do not think he graduated from Grade School. He is a member of AAA Committee in Carter County, and does a very good job in that position as he takes an interest in the work and does a lot of reading.

"Bill has a very likeable personality and an excellent understanding of the stock business, as he has been running cattle for the last 20 or 25 years. He has a nice set-up at his ranch. Bill's ranch formerly was not watered very well, but in the last 10 or 15 years—even before the AAA program—he started building stock water reservoirs. At the present time he has 13 reservoirs on his place, some of them as much as 10 or 15 years old. Most of these are large stock water reservoirs and hold water for 2 years or more.

"He is doing very little farming—just plans on raising enough for feed for his stock.

"I can assure you that Bill is a very good friend of mine and that I value his friendship very much."

THE purpose of this meeting today is to decide if we want to organize a Soil Conservation District in the Box Elder drainage area. This would include all of the Box Elder and tributaries in Carter County. All persons owning, leasing, or controlling land in this area would be included. If others outside the district wish to organize and come within the district after it is formed, they may petition the State Committee to do so. Districts usually take in one drainage area.

We have had one meeting, several weeks ago, at the Johnston Schoolhouse, about 36 miles down Box Elder. At that time it was decided to take in all of the Box Elder drainage area, and about 20 of us have signed a petition to organize a district. Therere are several of us here who were at that meeting.

Today we are fortunate enough to have Mr. Severson, our County Agent from Baker (as you know Mr. Zeidler has left the Extension Service for an easy job, running a ranch); and Mr. M. P. Hansmeier, Extension Conservationist.

These gentlemen are here to assist us, and I believe to give further information to help us decide if we want a district. If there are any questions to ask, now is the time, for I believe these gentlemen will try to answer them for us.

For those who have not heard about the soil conservation districts and the benefits that may be derived from them, I will read some history of them that I have prepared in brief form; also how they are organized. If I have made any mistakes I hope these gentlemen will correct me, for there is an old saying that "In a democracy, the purpose of information is to enlighten, and not to restrain or compel." That, likewise, is the purpose of informational activities in a soil conservation district. After people are correctly informed they will make their own decisions, as to participation. The Soil Conservation movement has the support of State and Federal agencies whose programs are concerned directly or indirectly with the conservation of land and human resources.

Soil conservation is preparedness in peace as well as war times. Water let go to waste is wealth wasted. Soil conservation applies to erosion control and prevention; it can be applied to methods of tillage, grazing, ditching, diking, reservoirs, spreader dams, contouring, contour strip farming, tree plantings, land use, economic, social, and many other problems. Really to be complete, a soil-and-water-conservation program must bring into use all of the known good, practical means of saving soil and water adapted to an area, and it must bring them into use on all of the land, not on only a segment of it; and this must be done for practical reasons, in such a way that the farmer or rancher is able to maintain or increase his income after the conservation measures are applied to his land.

Wind and rain are natural forces. They follow no pattern laid down by man. They respect neither his fence lines nor property lines. Single-handed combat with erosion is costly and can never be anything but piecemeal.

Through a soil conservation district law farmers and ranchers are permitted to organize and form soil conservation districts that will have the status of governmental subdivision of the State. The Montana Soil Conservation Districts law was passed by the 26th General Assembly.

Although Texas did not pass a soil conservation district law until 1939 that State already leads all other States in the total number of soil conservation districts voted in by landowners, and in the total acreage in the districts. Landowners approved in referendum the creation of a total of 46 districts in about 75 days from March 9, 1940, to May 25, 1940. The 46 organized districts cover approximately 44,407,976 acres and include within their boundaries more than 225,000 farms and ranches.[1] This would average 4,891 farms or ranches to a district, so thay are not very small districts. The State Soil Conservation Board subsequently approved all these districts for organization and appointed two supervisors in each district. Landowners in all these districts have elected three additional supervisors to complete the five-member boards which will direct the land resource-conservation activities in each district. More than 90 percent of the total votes cast in many of the referendums favored the creation of proposed districts, and in one, Highland Soil Conservation District, the landowners unanimously voted to organize a district. These districts are not confined to any one section of the State, but instead are well distributed. That fact is conclusive evidence that farmers and ranchmen throughout the State recognize that they have conservation and proper land-use problems and that they are eager to organize soil conservation districts for a cooperative attack on these problems.

Montana has only a few of these soil-conservation districts organized but no doubt we will have a great deal of them in the near future. Several of us were in Wibaux County, Mont., where they have a district voted by approximately 86 percent of the total vote. This district covers the whole county. They have problems slightly different from ours. Theirs is more of a farming community, while we in 1940 built 161 stock water dams, 189 spreader dams, developed 18 springs and dug 7 wells, sowed between 12,000 and 13,000 acres to crested wheatgrass, alfalfa, and sweetclover, built a number of dikes; had tens of thousands of acres of deferred grazing—these mostly on old fields and range land. Wibaux County has done more contour furrowing, contour strip cropping, built more spreader terraces, erosion dams, etc., on cropland. Of most interest to me was a series of water storage dams for irrigation and a stock water dug-out reservoir. I will say that it is the best I ever saw. Taking it all and all I do not see why it wouldn't apply to our conditions; and I will say that Wibaux County has done good work for the short time the conservation district has been in operation.

No district can be formed unless the people want it, and then not unless they register this want first by petition and later by a favorable vote of 65 percent of the land occupiers voting in the referendum. Once the district is formed, control of its affairs rests in the hands of local people. The supervisors are not subject to any regulations from the State Committee or from any Federal or State agency. As with other cooperative enterprises their role is that of cooperation; and especially on State and Federal land, supervisors of districts will need the help of whatever agency is in position to assist them. This help may be financial, it may be in the nature of technical assistance, or in the form of seed and plant materials, equipment, etc. They will need the benefit of the discoveries of the State Agricultural Experiment Stations, and the educational services of the Extension Service. There will be engineers and machinery to bring into the district.

The bill provides for the following to be members of the State Committee: The Director of the Montana Agricultural Experiment Station at Bozeman, Montana; the Director of the Agricultural Extension Service at Bozeman; a member from the State Water Conservation Board, designated by that Board; a mem-

[1] See February 1942 issue of SOIL CONSERVATION for up-to-date figures on Texas districts.

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ber of the State Grazing Commission designated by that Commission; the Commissioner of the State Department of Agriculture; and two farmer members chosen by the Governor.

The Committee supervises the formation of soil conservation districts and sets the boundaries for each district. Any individual, or group of individuals, who feels that a district is needed for the benefit of the land surrounding his home may take the first step toward the creation of a district. This interest may be signified by requesting a blank petition form from the Soil Conservation Service State Coordinator, Mr. Truman C. Anderson at Bozeman. The petition must be signed by at least 10 land owners of the proposed district. The more names on the petition the better.

After the Board receives the petition it must set a date and place, and give due notice of a public hearing to be held for an open discussion of the questions of desirability and necessity of the creation of the proposed district. Any interested party may present spoken or written opinions or testimony. If the hearing shows people are favorable to the creation of a district, the Board does not grant the right for the organization of the proposed district. The Board only accepts or affirms the petition.

The State law specifies that the qualified land occupiers must vote by secret, unnumbered ballot, on whether they themselves will create a district. Those eligible to vote in an election are land owners, their wives and others holding equitable interest in the land, and land occupiers.

The State Board, after accepting the petition for a district, and fixing its boundaries, sets the date and places for the elections and gives due notice of them.

If the formation of the district is affirmed, it is the responsibility of five supervisors to govern it, each of whom must be a land owner within the district and actively engaged in farming and ranching. The State Board appoints two supervisors who obtain from the Secretary of State a certificate establishing the district as a legal subdivision of the State, a public body corporate and politic. After the issuance of the certificates of organization the district elects three more supervisors and thereafter elects all successors as vacancies occur on the Board of Supervisors.

The term of office of all elected supervisors is 3 years; of the two appointed supervisors, 1 and 2 years respectively.

The supervisors and State committeemen receive no salary. They may be reimbursed, however, for expenses incurred in carrying out their duties.

The successors of the appointed supervisors are elected in the same manner as other supervisors and for regular terms of 3 years.

A soil-conservation district does not have authority to levy taxes or issue bonds.

The program is voluntary. Farmers and ranchers will not be forced to take part in a district program unless they decide that land-use regulations are needed and it is impossible to carry on an effective erosion-control program because a few of the farmers refuse to treat their lands. However, before land-use regulations could be put into effect, 65 percent of the voters "in a separate election after the district has been operating" would have to vote favorably for land-use regulations. They have not got the land-use regulations in the Wibaux County Soil Conservation District and it has been operating for about a year. I doubt if we would need them in this district. However, the supervisors will carry out the kind of soil-conservation program that farmers or ranchers want.

The soil-conservation work that the districts do will be financed in several ways. The land owners and land operators who directly benefit from the application of erosion-control measures to their lands furnish labor, materials, equipment, etc. The supervisors can get in machinery to operate at cost, plus a slight replacement charge. Appropriations may be allocated by the State Committee; and services, funds, and properties may be contributed by the United States Government through the Department of Agriculture or other agencies. The law provides that after a district has existed for 5 years farmers may petition to have the district dissolved.

FARM CONSERVATION PLANNING FOR WAR NEEDS

(*Continued from p. 226*)

This whole problem of farm planning for war needs challenges the best thinking of agriculturists. The problem is one of efficient production in accordance with needs. At the same time, we must safeguard our basic resource—the soil—for continued use. Certainly nothing can be gained by decreasing the emphasis on conservation at this time. On the contrary, increased attention to land use capabilities and conservation measures offers the best means of meeting this emergency.

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For REFERENCE

Compiled by ETTA G. ROGERS, Publications Unit

Field offices should submit requests on Form SCS-37, in accordance with the instructions on the reverse side of the form. Others should address the office of issue.

Soil Conservation Service

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[2] From Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

Farm Conservation Planning for War Needs

By E. H. REED[1]

The war, with its attendant needs for increase in production of certain agricultural products, has intensified the problem of conservation planning. First attention of the Department of Agriculture is being given to production of the farm products

(Continued inside on p. 224)

[1] Head, farm management section, Soil Conservation Service, Washington, D. C.